KING COUNTY ELECTIONS
TESTING OF PROPOSED NEW BALLOT TABULATION SYSTEM

Technology Testing Subcommittee Briefing for full Citizens' Election Oversight Committee

OVERVIEW
CEOC named a subcommittee in the fall of 2008 to specifically address the introduction of new ballot tabulation equipment and related software. That subcommittee consists of AJ Culver, chair; Frank Radford, Mike Snyder and Monica Tracey.

The CEOC technology testing subcommittee membership is NOT qualified to render a judgment on the technical aspects and performance of the proposed new tabulation system. Instead, the group understands it's primary purpose to be:

> Verify that KCE has developed a well conceived and comprehensive testing plan and that they are conducting these tests of the software and hardware in a responsible, professional manner; and,
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> Inform the full CEOC, the King County Director of Elections and the King County Council of our observations and findings with respect to the new system.

CURRENT ACTIVITIES
On April 24, 2009 KCE (King County Elections) completed the final phase of its in-house testing program for the proposed new ballot tabulation system developed by Premier Election Solutions. The testing program began in February, and was observed at several intervals by the CEOC Technology Testing Subcommittee,

Starting April 27th, KCE staff is being trained on the new system by Premier at three levels: Basic (for all permanent staff); Intermediate (to cross-train senior/midlevel staff); and Advanced (for staff assigned to tabulate ballots using the new technology).

In addition, a report on the new system is expected presently by the independent security consultants (former Oregon election official Al Davidson and computer security analyst Adam Gaydosh with the Anitian consulting group) retained by King County for an independent evaluation.

KCE was intending to use a May special election as a "real life test" of the new system in a real election. However, there are no May special elections in King County. As an alternative, KCE plans to conduct a "trial election" with approximately 20,000 sample ballots (half preprinted by vendor, half marked in-house by staff) using the same procedures and processes currently used under the old system for generating and mailing ballots, receiving ballots from USPS and sorting them on the Pitney Bowes equipment, opening and inspecting ballots, preparing them for tabulation and reconciling them after tabulation. With respect to tabulation during the trial election, this will be done using the new system in the scanning/tabulation work area, which was expressly designed for this purpose. This space was where the old machines have been previously employed to count ballots using the old system,

If all goes according to plan, the Office of the Secretary of State (OSOS) will hold a public hearing on May 21st at KCE Renton, prior to state certification of the new system. Assuming OSOS approves the plan, at that point responsibility shifts to Director Huff's office and staff. If the Director approves implementing the new system for an all vote-by-mail August primary and November general election, it is our understanding this decision must be confirmed by the King County Council. The time line is critical, as this decision to authorize the new system must be made in late June or early July if the new technology is to be used for the primary.

TESTING AND RELATED ACTIONS

Beginning in February 2009, KCE conducted the testing with its own staff under the supervision of testing director Bill Huennekens. This process was extensive, and was aided by very active cooperation vender representatives, direct consultation from Paul Miller and Patty Murphy (OSOS), and independent evaluation by Al Davidson and Adam Gaydosh, the consulting team contracted for that purpose.

The CEOC Technology Testing Subcommittee observed parts of all phases of testing, including:

> Acceptance testing of ballot scanning units and adjudication stations, including both hardware and software (note that each subcommittee member observed the test and check-out of at least one individual scanning unit from start to finish).
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> Mock election testing, similar in scope to the logic and accuracy tabulation test required by state law before every actual election, in which over 20,000 sample ballots were tabulated, and the test results were compared with the anticipated outcome.
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> Ballot "corrections" using the OSOS printed guidelines for addressing those 16-18% of ballots that have overvotes, writeins, undervotes and other marks that inhibit machine tabulation.
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> Volume testing, in which 1.5 million ballots were run through the new system (300,000 sample ballots were each run five times) to simulate the sheer mass of voting the system must be prepared to handle on behalf of King County's one million plus registered voters.

OBSERVATION

Here are the most significant of the subcommittee's observations, based on both personal observation as well as conversations with KCE staff and others directly involved:

A. Testing was conducted in a professional manner by KCE staff with significant vendor support and OSOS consultation. Both the plan and schedule were followed, save that the latter had to be adjusted due to issues that emerged during mock testing.

B. KCE leadership and staff facilitated open observation of the testing process from beginning to end for our subcommittee, as well as interested members of the general public.

C. Independent consultants Davidson and Gaydosh gave us their preliminary overview (during the acceptance testing period) including their belief that the system being tested by KCE was a significant improvement over the manufactures' earlier prototype.

D. Acceptance testing of individual scanning units was successful, with all units passing the full battery of tests; however, some required significant attention and adjustment by Premier technicians before they passed the test, and one unit was rejected and replaced

E. Initial mock election testing revealed some unexpected anomalies in the new system; for example in some instances the number of images scanned was not correctly communicated within the intra-system computer network, while in other cases the system was requiring batch header cards in situations they should not have been necessary.

F. At one earlier point in the test program, testing was suspended until Premier provided a new software update (which is Windows based), which provided satisfactory fixes and eliminated the anomalies.

G. Following the software fixes, the testing program was restarted, and the full test deck of over 20,000 sample ballots was scanned and tabulated, with the results matching the expected outcome, which like an official logic and accuracy test for a real election tested the new system's counting capacity, The test ballots included writeins, overvotes, undervotes and foreign language ballots to make the testing procedures most realistic.

H. Volume testing consisted of scanning 300,000 sample ballots through the new system five times each, for a total of 1.5 million ballot images; this process took two weeks with a full complement of machines and staff plus technical support by Premier and finished as scheduled last Friday. As with the acceptance testing, volume testing showed that the individual scanners are complicated machinery that really takes a beating when you scan hundreds of thousands of ballots, thus requiring a high level of maintenance and servicing to stay up and running.

FINDINGS

The following are based on the CEOC Technology Testing subcommittee's observations of KCE testing of the new system from February through April, as well as our previous and ongoing observations in general of King County elections:

1. KCE is committed to a comprehensive, vigorous and professional testing program aimed at replacing the county's current outdated, inadequate ballot tabulation system, with a new system that is adequate, secure and robust enough to serve and protect the voters of King County.

2. KCE is also committed to running elections in a way that is free, fair and transparent; and that is exactly what they have done with respect to the testing program for the new system, including allowing and assisting the CEOC technology testing subcommittee get a good look at the various testing phases and activities, and most importantly telling us about the various issues and problems that emerged during testing.

3. It was the testing program developed by KCE that uncovered the software glitches that suspended the mock election testing until they could be corrected. This illustrates the professional standard of the department's testing, as well as the need for constant vigilance in evaluating, certifying and actually using the new system (or any other election technology) in the real world.

4. The Secretary of State's Office has been fully involved in all aspects of the testing program. As KCE has been waiting unsuccessfully for almost two years for federal certification, it is important that state certification is given in conjunction with the acceptance process being conducted by KCE. Progress to date points favorably toward this end.

5. The complexity of the proposed new system's software and hardware, the fact that KCE is it's first customer, and the reality that, it adopted, King County voters must depend on the new system's accuracy, practicability and security for the foreseeable future, all these factors combined require that KCE contract for a high level of technical support and backup from Premier, and also hold the vendor to a high standard of professional compliance.

6. By the same token, KCE will need to maintain a high level of staff training, productivity, oversight and initiative in order to make the new system work; the comprehensive staff training program scheduled for the last of April/first of May is an excellent start to the process of making KCE staff as good at operating the new system if it's adopted, as they currently are at operating the current system.

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